REMARKS

Status Of Application

Claims 3-6, 11-18, 24-26 and 37 have been cancelled.

Claims 1, 2, 7-10, 19-23, and 27-36 are pending in the application; the status of the claims is as follows:

Claims 21-23 and 33-36 are rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification.

Claims 1 and 9-10 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,354,350 to Moore ("Moore").

Claims 1, and 7-8 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,743,287 to Robinson ("Robinson").

Claims 2, 19, and 21-23, and 27-36 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Moore in view of U.S. Patent No. 3,024,098 to Austin et al. ("Austin et al.") and U.S. Application Publication No. 2002/0104347 to Sakamoto et al. ("Sakamoto et al.").

Claim 20 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Moore in view of Austin et al. and further in view of U.S. Patent No. 6,387,145 B1 to Miele et al. ("Miele et al.").

Claims 7, 8, and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Moore in view of Austin et al. and further in view of U.S. Patent No. 5,256,544 to Rogers et al. ("Rogers et al.").

Claims 1 and 21-23 are rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Karcher et al.

Claim Amendments

Claims 1, 7-10, 19-21, 27, 29, 30, and 33 have been amended to more particularly point out and distinctly claim the invention. These changes do not introduce any new matter.

35 U.S.C. § 112 Rejection

The rejection of claims 21-23 and 33-36 under the first paragraph of 35 U.S.C. § 112 as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention, is respectfully traversed based on the following.

The specification discusses the direct use of humic acid alone. First, at [0011], the specification outlines the basis of the invention stating that "humate comprising humic acid when combined with a phosphate source in a dry, homogenous composition significantly increases the phosphate absorption. . . ." The specification further supports the direct use of humic acid through repeated references to "Leonardite (equivalent to . . . % humic acid. . .)." The amendments to claims 21-23 and 33-36 further support this reading by limiting the invention to Leonardite comprising humic acid.

Accordingly, it is respectfully requested that the rejection of claims 21-23 and 33-36 under the first paragraph of 35 U.S.C. § 112 as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention, be reconsidered and withdrawn.

35 U.S.C. § 102(b) Rejections

The rejection of claims 1, 9, and 10 under 35 U.S.C. § 102(b) as being anticipated by Moore, is respectfully traversed based on the following.

Moore shows a method of preparing a slow releasing particulate solid *iron humate* agricultural nutrient composition, containing between 20 and 70 percent iron humate and between 30 and 80 percent chemically coreated divalent metal oxide (oxides of magnesium, manganese, zinc, copper, iron, cobalt, or calcium), hydroxcide of a monovalent Lewis acid, and a water soluble inorganic phosphate. Moore further shows temperatures between 60 and 150 degrees C. (*See* Col. 3:17)

In contrast to the cited reference, claim 1 includes:

> A solid fertilizer composition comprising: a granular admixture of *Leonardite* humate and a phosphate source, selected from natural rock phosphate, monoammonium phosphate, diammonium phosphate, single superphosphates or triple superphosphates used singularly or in combination, which has been pressed together in a granular form, wherein the concentration of said humate is equal to or greater than 5% by weight of the final composition and the concentration of said phosphate source is equal to or greater than 5% by weight of the final composition, the balance being selected from the group consisting of binders, inoculants, plant nutrient sources, microorganism nutrient sources, iron, phosphate-solubilizing agents, chelating agents, and combinations thereof, *wherein the admixture is maintained at or below 100 degrees C during manufacture.*

These limitations are not disclosed or suggested by Moore. Moore fails to teach or suggest a mixture of Leonardite humate, phosphate and a group consisting of binders, inoculants, plant nutrient sources, microorganism nutrient sources, iron, phosphate-solubilizing agents, chelating agents, and combinations thereof. Rather, as shown in Col. 4, lines 27-53, Moore discloses the use of iron humates, detailing the specific benefits of iron in the invention, stating "[t]he new method provides attrition resistant granules of iron humate which preferably contain between 6 and 20 percent iron. . . ." To the contrary, the present invention relates to Leonardites and the specific benefits of the high concentration of humic acid contained therein. (Specification [0045-0048]; [0055]).

The maximum temperature laid out in claim 1 is also not disclosed by Moore. Although the possible range of temperatures occurring in the process shown in Moore overlaps the range required by claim 1, the claimed range "achieves unexpected results relative to the prior art range" and thus Moore does not anticipate claim 1 because the "particular range is critical." *In re Woodruff*, 919 F.2d 1575 (Fed. Cir. 1990); MPEP §2144.05. The specification explains that "an important aspect of the manufacturing process of the present invention is the maintenance of low temperature during manufacture" (Specification pg. 16, lines 25-26). By maintaining the temperature below 100 degrees C, the optimal effectiveness of the Leonardite in the fertilizer composition is maintained. As further explained in the specification, an internal temperature above 100 degrees C "negatively impacts the humic acid contained in the humate component of the fertilizer compositions of the present invention and, therefore, significantly reduces the benefits of the humate" (Specification pg. 17, lines 3-5). This aspect of the invention was not anticipated by Moore, and thus, claim 1 is patentably distinct over Moore. Therefore, since Moore fails to teach all of the limitations of claim 1, Moore cannot anticipate claim 1 or claims 9-10 which depend from claim 1.

Accordingly, it is respectfully requested that the rejection of claims 1, 9, and 10 under 35 U.S.C. § 102(b) as being anticipated by Moore, be reconsidered and withdrawn.

The rejection of claims 1, 7, and 8 under 35 U.S.C. § 102(b) as being anticipated by Robinson, is respectfully traversed based on the following.

Robinson shows a fertilizer and method wherein waste organic material is analyzed for certain inorganic chemicals (specifically Nitrogen, Phosphate, Potash, and Sulfur). Different major elements are added as needed based on this analysis. The constituents are mixed in a drum after the addition of an acid or base as shown in Figure 1 of the reference. Notably, during the reaction of chemicals the temperature within the reactor is allowed to reach "up to 280 degrees F" in order to produce "a new molecular structure including

molecular clusters of inorganic chemicals that surround humic acid molecules." (*See* Col 13:34-39; 14:45-50).

In contrast to the cited reference, claim 1 limits the temperature of the admixture to "at or below 100 degrees C during manufacture." Although the possible range of temperatures occurring in the process shown in Robinson overlaps the range required by claim 1, the claimed range "achieves unexpected results relative to the prior art range" and thus Robinson does not anticipate claim 1 because the "particular range is critical." *In re Woodruff*, 919 F.2d 1575 (Fed. Cir. 1990); MPEP §2144.05. The specification explains that "an important aspect of the manufacturing process of the present invention is the maintenance of low temperature during manufacture." (Specification pg. 16, lines 25-26). By maintaining the temperature below 100 degrees C, the optimal effectiveness of the Leonardite in the fertilizer composition is maintained. As further explained in the specification, an internal temperature above 100 degrees C "negatively impacts the humic acid contained in the humate component of the fertilizer compositions of the present invention and, therefore, significantly reduces the benefits of the humate." (Specification pg. 17, lines 3-5). This aspect of the invention was not anticipated by Robinson, and thus, claim 1 is patentably distinct over Robinson. Since Robinson fails to teach all of the limitations of claim 1, Robinson cannot anticipate claim 1, or claims 7-8 which depend from claim 1.

Accordingly, it is respectfully requested that the rejection of claims 1, 7, and 8 under 35 U.S.C. § 102(b) as being anticipated by Robinson, be reconsidered and withdrawn.

35 U.S.C. § 103(a) Rejections

The rejection of claims 2, 19, 21-23 and 27-36 under 35 U.S.C. § 103(a), as being unpatentable over Moore in view of Austin et al. and Sakamoto et al., is respectfully traversed based on the following.

Austin et al. shows a fertilizer composed of an urea-formaldehyde compound (50-90%) and a phosphorous-containing compound (10-50%). A binding agent, such as methyl

cellulose, starch, dextrine, alginates, sulfite spent liquor, or the like may be added to the mixture along with water.

Sakamoto shows a fertilizer containing a urea/aliphatic aldehyde condensation product and a sparingly water-soluable phosphatic fertilizer. When the form of the fertilizer is a particulate, the addition of water-repellent substances make it possible to control dissolution.

Claims 2, 19, 21-23, and 27-36 require the use of Leonardite humates. This limitation is not disclosed or discussed by Moore, Austin or Sakamoto. Moore specifically teaches iron humates. Moore explains the benefits of iron in the invention, stating "[t]he new method provides attrition resistant granules of iron humate which preferably contain between 6 and 20 percent iron. . . ." (Col 4:44-46). Austin also fails to teach the use of Leonardite humates, instead teaching an urea-formaldehyde compound (50-90%). Sakamoto also fails to teach a Leonardite humate fertilizer. Instead, Sakamoto teaches use of fertilizers such as "urea, ammonium sulfate, ammonium chloride, ammonium nitrate, calcium cyanamide, and ammonium humate." As none of the references cited relate specifically to Leonardite humates or the corresponding benefits of the high concentration of humic acid contained therein, claims 2, 21-23 or 27-36 are patentably distinct over Moore, Austin and Sakamoto.

Claims 21-23 and 27-36 further require that the temperature of the mixture during the manufacturing process be remain at least below 100 degrees C. Although the possible range of temperatures occurring in the process shown in Moore overlaps the range required by claims 21-23 and 27-36, the claimed range "achieves unexpected results relative to the prior art range" and thus Moore does not anticipate claims 21-23 or 27-36 because the "particular range is critical." *In re Woodruff*, 919 F.2d 1575 (Fed. Cir. 1990); MPEP §2144.05. The specification explains that "an important aspect of the manufacturing process of the present invention is the maintenance of low temperature during manufacture" (Specification pg. 16, lines 25-26). By maintaining the temperature below 100 degrees C, the optimal effectiveness of the Leonardite in the fertilizer composition is maintained. As further explained in the

specification, an internal temperature above 100 degrees C "negatively impacts the humic acid contained in the humate component of the fertilizer compositions of the present invention and, therefore, significantly reduces the benefits of the humate" (Specification pg. 17, lines 3-5). This aspect of the invention was not anticipated by Moore, and thus, claims 21-23, 27-36 are patentably distinct over Moore, as is claim 2 which depends on claim 1 which contains the same temperature limitation.

Accordingly, it is respectfully requested that the rejection of claims 2, 4, 19, and 21-36 under 35 U.S.C. § 103(a) as being unpatentable over Moore in view of Austin et al. and Sakamoto et al., be reconsidered and withdrawn.

The rejection of claim 20 under 35 U.S.C. § 103(a), as being unpatentable over Moore in view of Austin et al. and further in view of Miele et al., is respectfully traversed based on the following.

Miele et al. shows a fertilizer composition in the form of granules ranging between 0.1 and 1.5 mm consisting of an organic fraction (nitrogenous substance) and a mineral fraction (phosphate). Substances having a "biological action selected from a group consisting of microorganisms" may be added to the mixture.

In contrast to the cited reference, claim 20 includes:

> A solid fertilizer composition comprising 70.9% *Leonardite* humate by weight of the final product, 24.9% monoammonium phosphate by weight of final product, 4% iron oxide ore by weight of the final product, about 0.1% carbohydrate-containing binding agent by weight of the final product, and 0.1% microorganism inoculant by weight of the final product.

These limitations are not disclosed or suggested by Moore or Austin et al. The references fail to teach or suggest a mixture of Leonardite humate, phosphate and a group consisting of binders, inoculants, plant nutrient sources, microorganism nutrient sources, iron, phosphate-solubilizing agents, chelating agents, and combinations thereof. Rather, Moore

specifically teaches iron humates. And, as shown in Col. 3, Austin et al. discloses the use of an urea-formaldehyde compound and a phosphorus-containing compound. To the contrary, the present invention relates to Leonardites and the specific benefits of the high concentration of humic acid contained therein. (Specification [0045-0048]; [0055]).

Further, the limitations of claim 20 are not disclosed or suggested by Miele et al. Miele does suggest the use of microorganisms, however, the composition of Leonardite humate, monoammonium phosphate, iron oxide and carbohydrate binding agent is not disclosed and would not have been obvious.

Accordingly, it is respectfully requested that the rejection of claim 20 under 35 U.S.C. § 103(a) as being unpatentable over Moore in view of Austin et al. and further in view of Miele et al., be reconsidered and withdrawn.

The rejection of claims 7, 8, and 20 under 35 U.S.C. § 103(a), as being unpatentable over Moore in view of Austin et al. and further in view of Rogers et al., is respectfully traversed based on the following.

Rogers shows a process for solubilizing phosphate from phosphate containing ore by treatment with microorganisms.

In contrast to the cited references, claim 7 includes:

> The fertilizer composition of claim 1 or 2 wherein said phosphate source is natural rock phosphate.

Correspondingly, claim 8 includes:

> The fertilizer composition of claim 7, wherein said *Leonardite* humate and natural rock phosphate are combined in a ratio within the range of from 1:1 to 5:1 by weight.

Claims 7 and 8 and the independent claim on which they depend require the use of *Leonardite humates*. This limitation is not disclosed or discussed by Moore, Austin et al. or Rogers et al. Moore specifically teaches *iron humates*. Moore explains the benefits of iron in the invention, stating "[t]he new method provides attrition resistant granules of iron humate which preferably contain between 6 and 20 percent iron. . . ." (Col 4:44-46). Austin et al. also fails to teach the use of Leonardite humates, instead teaching an urea-formaldehyde compound (50-90%). Rogers et al. does not teach the use of humates at all.

Likewise, in contrast to the cited references, claim 20 includes:

> A solid fertilizer composition comprising 70.9% *Leonardite* humate by weight of the final product, 24.9% monoammonium phosphate by weight of final product, 4% iron oxide ore by weight of the final product, about 0.1% carbohydrate-containing binding agent by weight of the final product, and 0.1% microorganism inoculant by weight of the final product.

The limitation of Leonardite humate used in combination with monoammonium phosphate is not disclosed or discussed by Moore, Austin et al. or Rogers et al. and, thus, claim 20 is patentably distinct over these references.

Accordingly, it is respectfully requested that the rejection of claims 7, 8, and 20 under 35 U.S.C. § 103(a) as being unpatentable over Moore in view of Austin et al. and further in view of Rogers et al., be reconsidered and withdrawn.

35 U.S.C. § 102(b)/§ 103(a) Rejection

The rejection of claims 1 and 21-23 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Karcher et al., is respectfully traversed based on the following.

Karcher et al. shows a method for extracting humic acid from lignitic materials and/or recovering humic acid from its primary ores. Additionally, Karcher et al. shows adding

phosphoric acid to a pulverized humic acid containing ore, along with anhydrous ammonia, to form a humic acid fertilizer.

Karcher patented a "method for forming a fertilizer which includes scrubbing a pulverized humic acid containing ore with phosphoric acid to react with metal ions therein." Karcher does not teach the limitations set out in claims 1 and 21-23, which add "a phosphate source, *selected from natural rock phosphate, monoammonium phosphate, diammonium phosphate, single superphosphates or triple super phosphates used singularly or in combination. . . .*" Accordingly, claims 1 and 21-23 do not claim the use of phosphoric acid in the manufacture of the fertilizer product. Since Karcher et al. fails to disclose the limitations set out in claims 1 and 21-23, Karcher et al. cannot anticipate claims 1 and 21-23. Likewise, the cited reference does not support a *prima facie* case for obviousness of claims 1 and 21-23 and claims 1 and 21-23 are patentably distinct from the prior art.

Accordingly, it is respectfully requested that the rejection of claims 1 and 21-23 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Karcher et al., be reconsidered and withdrawn.

CONCLUSION

Wherefore, in view of the foregoing amendments and remarks, this application is considered to be in condition for allowance, and an early reconsideration and a Notice of Allowance are earnestly solicited.

This Amendment does not increase the number of independent claims, does not increase the total number of claims, and does not present any multiple dependency claims. Accordingly, no fee based on the number or type of claims is currently due. However, if a fee, other than the issue fee, is due, please charge this fee to Sidley Austin LLP Deposit Account No. 18-1260.

If an extension of time is required to enable this document to be timely filed and there is no separate Petition for Extension of Time filed herewith, this document is to be construed as also constituting a Petition for Extension of Time Under 37 C.F.R. § 1.136(a) for a period of time sufficient to enable this document to be timely filed.

Any other fee required for such Petition for Extension of Time and any other fee required by this document pursuant to 37 C.F.R. §§ 1.16 and 1.17, other than the issue fee, and not submitted herewith should be charged to Sidley Austin LLP Deposit Account No. 18-1260. Any refund should be credited to the same account.

Respectfully submitted,

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